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## HOW CAN WE ADAPT OUR SYSTEM OF EDUCATION TO PRESENT NEEDS?

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IN this paper I can attempt only to present a physiological and biological standpoint, from which, as it seems to me, the subject may wisely be viewed.

Socrates used to say that, if a thing is good, it must be good for something. What is the use of an education? A system which would enable the child and the man to avoid or to cope with the dangers of life, to meet its emergencies, and to grasp its opportunities, would evidently be very useful. It must also produce good neighbors and citizens, for the interests of the state and the race are paramount.

But the dangers, emergencies, and opportunities are not the same in different times and places. The German system may not exactly suit our needs. Time also changes all things. In the seventeenth century New England consisted of isolated farms and villages dotting a wilderness. Educated men were rare, books were scarce and expensive. Illiteracy and barbarism were real and pressing dangers. The stress and strain of life bore heaviest on the comparatively tough muscular system. Life was simple. Opportunities were comparatively few.

Nine-tenths of the child's education consisted in home training. For physical exercise, manual training, and nature study, the farm gave abundant opportunity. The single term, consisting of but a few weeks, was best devoted entirely to the study of books.

In all these respects life has changed completely. We have been compelled to modify our system of education to meet entirely new conditions, dangers, emergencies, and opportunities.

Mr. Huxley once said that Nature had framed her own system of education, and had made it compulsory. The child *grows* and *develops* into manhood through a series of stages;

childhood, youth, adolescence. Each stage is characterized by the appearance, or by the rapid growth or development of certain organs. The business of the individual at each stage is to promote the growth or development of these organs by suitable exercise. This exercise satisfies a craving in the child, and appears as play. Our business as teachers is primarily to promote these processes, and to train the fully developed organs. We cannot cause growth or development or greatly change their direction.

To oppose Nature unnecessarily always results in harm. Not to secure her for our ally, wherever this is possible, is surely folly, if not sin. Let us ask, therefore, What would Nature have us do with the individual at each stage? If her suggestions are sound and wise, we will do well to heed and accept them. I wish to begin with early stages, for here her aims are clear, unmistakable, and evidently wise.

What would Nature have the baby do? Just what he does naturally, of course. He can eat, sleep, and grow. If we were wise, which we usually are not, we should expect nothing more from him.

But the baby squirms and wriggles. The child naturally likes to run, jump, dig, and climb. The development of the muscular system follows hard after that of the digestive. But the muscles develop and crave exercise in a certain order: first, those of trunk, shoulder, and thigh; then those of arm and leg; last of all, those of the fingers. First the child sits upright, then he walks and runs, and climbs trees; finally the boy uses his fingers to curve the ball.

Why does Nature urge the child to exercise so persistently the heavy, clumsy, fundamental muscles? Being large, they contain most of the muscular tissue of the body. Their exercise stimulates and ensures the development of heart and lungs, the rapid circulation of warm, well oxygenated blood in all the organs, and vigorous, healthy growth in every part. We should never forget that a healthy, vigorous, digestive system is essential to life, and that a tough muscular system is the foundation of health.

But each group of voluntary muscles is controlled by a special center in the brain. There are old, fundamental brain centers for the muscles of trunk, thigh, and shoulder. There are younger, more delicate, brain centers for the muscles of our fingers. According to good physiologists these old brain centers are precisely those which bear the heavy strains of life, and which resist nervous prostration and hysteria. When Nature urges the child to exercise the heavy fundamental muscles, and thus to develop their brain centers, she is fitting him to endure without nervous breakdown the strain and wear of our modern American life.

We see that the latter evolved portions and uses of any organ or system may be finer and higher than the older. But the old, fundamental uses and portions are essential to life itself.

The fundamental use of the brain is evident in the child. It is a switch board to ensure that every sensory stimulus shall give rise to a motor impulse, calling forth the muscular action suited to the emergency. A successful life is in the last analysis a series of suitable responses to stimuli. The child is receiving his first lessons in this great art. There can be no more important training.

What mental power does Nature regard as fundamental? Which one does she select as essential, worthy of development at the earliest possible period in the child's life? It is not the power of logical thought, for this develops almost last of all. It is remarkable how young a baby can become very angry. Feeling is older than thought in the individual and in the race. Feelings, as President Hall has well remarked, are racial; opinions, individual. Our deepest feelings are almost always true, our clearest and best logical thought may be true in part. The vigor of our actions is proportional to the depth and intensity of our emotions. "Out of the heart are the issues of life." Here again Nature has proved herself very wise.

In boyhood also, usually somewhat suddenly, arises the demand for fair play and the outcry against the cheating of playfellows, which frequently results in a declaration of war. This instinct or feeling seems to form almost the whole of his

system of ethics at this time. We must take heed lest we despise it. It is the germ of something vastly higher and better.

At ten or eleven the girl is growing faster than the boy. In the fourteenth year her increase in height and weight decreases rapidly. This decrease is Nature's red lantern of warning. The girl is rapidly becoming a woman. During a period of so rapid and so great change the organism is sensitive, often irritable. Occupation is needed, but overwork is harmful; fret and worry are dangerous. This would hardly seem to be the best time to begin new and difficult studies, to double the already too frequent examinations, to appeal by every means to her ambition and fear of failure. Balls and parties lasting into the wee small hours of the morning would not seem to furnish the best rest and refreshment for her exhausted nerves. Either the college, or the preparatory school, or the parents, or better, all three, *must* find some way to lighten the burden which is crushing our girls. Otherwise, after a few generations, we shall be educating mostly French Canadians or Chinese.

From this point we will confine our attention to the boy. I dare not attempt to analyze a so fascinating and complex being as the student in the woman's college. Now the boy is approaching maturity, and goes away to school. I hope you will pardon me for still calling him a boy. At the age of sixteen the most conversions take place. "This," says President Hall, "is a serious and solemn epoch, and ought to be fittingly signalized. Morality now needs religion. . . . For the strongest motives, natural and supernatural, are needed for the regulation of the new impulses, passions, desires, half-insights, ambitions, etc., which come to the American temperament so suddenly before the methods of self-regulation can become established and operative. (See Stanley Hall, *Moral and Religious Training of Children and Adolescents. Pedagogical Seminary*, Vol. I, p. 209.) Nature urges church and school to cultivate a strong and healthy religion which can dominate and steady the life through the stormy period which soon follows, if it has not already begun.

The muscles are well grown, and are clamoring for exercise.

The boy craves and digests large amounts of food. A flood of motor energy is produced, which must find an outlet. It is no time to fasten down the safety-valve. The healthy boy rejoices in his ability to overcome resistance, to endure hardship and pain. He often inflicts pain ignorantly and thoughtlessly, rarely cruelly. If the higher powers are stunted or belated, he may become a dangerous savage or a brute, controlled by the lowest passions, as we see in the gangs of our cities.

His plays are now all group games, where he must subordinate his own wishes and interests to those of his side. "Team-play" is the great word. Loyalty to class, fraternity, or set is often a higher virtue in his eyes than fair play and entire honesty. This group-interest is the germ of civic virtue and of patriotism.

Hitherto his thoughts and ambitions may not have strayed far beyond his home. Now the world beckons—a world as fresh, fair and good as on the morning of creation, as it should be still to each one of us. A sense of increased power urges him outward, as a strong swimmer longs to meet the waves. He is sure that even the shady side of life cannot be as bad as it is painted. He must know life, men, the world. At any cost he will eat of the fruit of the tree of knowledge of good and evil.

Endless possibilities open before him, and he is conscious of the power to realize them. Remember that he has not yet been taught by experience or saddened by failure. His hope and courage are boundless. Nothing is impossible to him. He sees his parents and teachers fettered by all kinds of limitations plodding in a humdrum round. His life shall be larger and freer. He will gird himself, and go whither he will.

He feels that his elders do not understand him any better than an ant can enter into the life of an eagle. Often he is right in this feeling. He becomes reticent, and does not tell us of his plans and hopes.

He is rebellious against authority, impatient of discipline and restraint, and resents counsel and advice. He appears, and often is, conceited, "bumptious," obstinate, headstrong, lawless. At the same time he longs for approbation.

While essentially optimistic, slight reverses and disappointments plunge him into despair. He has yet to learn that tides turn and pendula swing. He cannot bide his time and wait. He lives in the present. One swallow makes a summer for him; and if it is cloudy today, the sun will never shine again.

He dreams. Visions rise before him so grand that his mind cannot grasp or outline them, much less can he describe or define them. They are hazy, indistinct, felt, rather than seen,

in part are prophecies, and in part  
Are longings wild and vain.

They are like glimpses of mountains on a far horizon where eternal rock cannot be distinguished from drifting mist. Will the mountain emerge? or will the mist hide all and leave him without landmark or guide? This is a sphinx-question.

It is the period of storm and stress, of courage and hope, of doubt and despair. Life is a mixture of the strangest contradictions. The boy at school or college may well say: "My name is legion, for we are many." I do not wonder that we often fail to understand him. Yet how can we expect him to be other than he is?

It is not pleasant to listen to the first efforts of a young cockerel trying to crow. His first notes are neither long, clear, nor musical. But, if you could stop his squawking, he would never learn to crow. Old chanticleer, meantime, does not give him much advice, but shows him now and then what can be done in that line.

I have touched only a few of the salient characters of this marvelous adolescent period, when life is at flood-tide. We must hasten to ask, What is Nature trying to do with the boy at this age? and, How can we help her and him?

Nature would have the boy possess an athletic brain. She does not care merely for brawn. But to mere and pure learning, or even to intellectual training and development, she does not give the supreme importance which it holds in many of our college courses, not to say curricula. I pass this by, not as unessential or unimportant, but because you are all fully aware of its value.

In athletics she is training him to a life of strenuous action, to habits of clear and accurate perception, and of wise, prompt action. She is teaching him to accept and bear responsibility. Athletics demand a quick recognition of conditions, immediate decision, unhesitating, instant execution. Certainly this is a most important part of education. Physical training already confers many priceless benefits. It will form a larger part of future educational systems.

Life in school and college has an inestimable value in developing social instincts and civic virtues. We have not yet begun to realize the possibilities of school and college as experiments in the line of an ideal community.

Nature is putting the boy in the path which leads to wisdom by awakening hunger for the knowledge of the meaning of life, of its best methods, its opportunities and dangers.

But, above all, Nature would have the dim and hazy ideal become clear and distinct. She would have it dominate his life. It alone can make him a hero, and prevent him from sinking into base and cowardly philistinism. This is the grand opportunity, the awful danger, of school and college life. For the life of the man in all that concerns morals, religion, aims, and ideals, will remain much the same as it is in school and college. It very rarely rises higher.

By athletics and social life, by even a dim and hazy vision of grand ideals, Nature is slowly training the boy to use his powers, to have them all well in hand. She has already developed and trained the powers separately. Now she correlates them, so that properly combined they may produce the greatest results. Slowly she teaches the boy self-control, developing thus that grand virtue which the Greeks called *Engkrateia*, for which we unfortunately have no word, but which means inward strength and endurance.

Finally, and most important of all, throughout this period Nature would have the boy's life dominated, his passions controlled, his fevers calmed, by a profound, healthy, powerful religious thought and feeling.

Is not Nature's system fairly well suited to train the boy to



grasp the opportunities and to meet the dangers of life? Is she not doing her part to fit him to be a useful citizen of these United States and of the kingdom of God here and now?

Nature is very busy with the boy at this time. Her required courses are many, and each one of them is of vital importance. The Greeks knew well the importance of harmony, perspective, proportion. *Meden agan*, too much of nothing, was their excellent motto. We teachers must somehow correlate all these courses, and that without detriment to the increase of learning and intellectual power, whose value I would not underestimate. We must instruct, guide, steady, and control the boy who is restive under restraint, impatient of authority, and who has little respect for our theories. We must prove to him that our knowledge bears directly on life or he will continue to care little for it.

Above all, we must help him to see clearly the form and substance in his dreams. He has ideals, but he sees them "as in a glass darkly." They are sentiments rather than visions. There is great danger that they will fade out into objects of sentimental regret, if not completely forgotten. We must help him to give them form and outline, distinct meaning, and definite relations to daily life and work. We must show him that what now seems to him so near that he can easily grasp it, is really far away, attainable only by long, hard, and weary struggle. Yet we must not abate one whit his ardor, courage, faith, and hope. We must train him to patience and endurance. He will listen to us just so long and so far as he finds us in sympathy with him and his highest aims, and sees in our work the realization of his ideals.

Socrates once said that his work was that of a midwife to bring great thoughts to birth. A Socratic thought was almost always an ideal of life. He pretended to teach nothing. But before the eyes of Alcibiades he called up such visions of truth, nobility, and righteousness that even the young profligate was stung to tears and hated himself. Socrates' positive teachings were few, though mighty. But he imparted life. Virtue went forth from him into the listener. This is the final test.

Dr. Martineau once said that we should never have a proper system of education until we had a properly written "Lives of the

Saints." The "Lives of the Saints," vertebrated, muscular, saints with red blood and warm hearts; "the apostolic succession of great souls," to borrow Heine's expression; these are the proper study of adolescents.

Do you remember how Sargeant What's-his-name in Kipling's poem trained the Egyptian fellahin to fight as they did at Firkeh? He put himself into every man of them. This "everlasting miracle" of the contagion of a great and powerful life is the secret and essence of teaching, as it is the end of evolution.

Are we in danger of forgetting that "the philosopher must first of all be a man?" Are we using our departments too much as means of instructing specialists in our own chosen branch of knowledge, too little as means of true, broad education and development? Do our requirements and examinations for entrance to college inspire the teacher in the preparatory school to follow Nature's suggestions? Or do they almost compel him to devote his time and energy to "coaching" the boy to answer a special set of somewhat narrow and useless questions? Is such work the best aid to growth and development of either teacher or student? In our ceaseless discussion of, and tinkering with the curriculum do we assign sufficient importance to the aims and methods of the teacher, as well as to the content of the study abstractly considered? In the use of remedial measures do we sometimes treat symptoms instead of causes of disease, and seek to cure fevers by applying lotions to the skin? Is the college furnishing a proper training to fit the man of business to use aright his vast opportunities and power, and to make him feel his great responsibility? In brief, is the work of the preparatory school and college even now completely adapted to train the student to cope with the dangers, to meet the emergencies, and to grasp the opportunities of life?

If we can develop and train a race of men and women possessing good digestion; a tough muscular system and sound health; a steady, firm nervous system which can bear the stress and strain, and meet the emergencies of life; a warm heart and deep feeling stimulating a powerful will set on righteousness; a life governed by high ideals—if we can train such men and women,

we may well be proud of our work. Until we can accomplish this we have not completely attained. For only such a race will fulfil the vision of the prophet that "A man shall be as a hiding-place from the wind, and a covert from the tempest; as rivers of water in a dry place, as the shadow of a great rock in a weary land."

#### DISCUSSION.

PROFESSOR WALTER BALLOU JACOBS, of Brown University: I have been delighted and inspired by these words, as I know each and every one of us has been, and I for one want to thank Professor Tyler for this inspiration. It has been a remarkably clear presentation of the wonders of human growth and development, and an eloquent appeal to us to follow in the path of nature. It calls for firm muscles, steady nerves, and high ideals; and it shows us that the only way to reach these is by acting through and in accordance with the laws of nature. There is always something inspiring in this appeal to nature. The old nature love for woods and fields and running brooks wells up within us—the old nature reverence that made our Aryan forefathers worship Agni, the fire, and made the dwellers on the Nile worship its mysterious waters, and made the old Greeks worship the clear blue of the vaulted sky. This is nature, the mother of us all—our mother. Rest and truth are to be found in her bosom. Rousseau struck this note and all Europe listened, from the Pyrenees to the banks of the Neva. Even Kant, in his distant lonely home on the sand dunes of the Baltic, forgot his daily walk, absorbed in the revelations which this thought presented; and so that most illogical of all writers charmed that most logical of all philosophers.

Evolution and modern biology have shed light upon the problems of youth and adolescence, and brought out truths that Kant and Rousseau could never have dreamed of. The wondrous second birth—the birth of man as man and of woman as woman, the birth of hopes and ambitions, of fears and despairs—all this the modern study has revealed to us in a way that has made clear the amazing reach of all this wisdom and thought about nature. And yet, in spite of all this new light and the fulness of meaning that has been given, this second preaching of the gospel of nature has very many of the same characteristics that the first preaching of the gospel of nature had from the lips of Rousseau. It is vague, indefinite, but glorious and many-colored; like the light of the morning sun before the sunrise, big in

promise of light, but lacking in clearness of outline. It lifts us up, inspires us, puts us above the firm ground of reason and lifts us into a halo of emotions and possibilities.

There is another view, too, in which the two are alike. This modern view, as the old view, is inclined to be onesided. It overemphasizes feeling and willing, in education, at the expense of knowing. And yet, whatever we may say of the plasticity of man on the side of feeling and willing, the experience of generations has proved to us that there is no part of man so plastic, so easily to be shaped, and so ready to retain that shape as the intellect ; and it is in this realm we must realize that education has gained so much ground that is valuable to the individual and valuable to the race. So then, in accepting this new gospel, we can not, it seems to me, accept it as that which shall overthrow and put down the old ; but rather we shall accept it as a new testament which shall be bound in the same volume with the old, and the two shall be our guide. It seems to me that, despite this rainbow color that shrouds all the doctrine of nature teaching, and in the midst of what I must say sometimes appear to be poetic exaggerations of the prophets of adolescence—I believe that in the midst of all this there are at least two distinct and rational pronouncements that may well give us pause and make us ready to preach these far and wide through our country, until they shall be adopted in every school and revolutionize every school and college and university. These two principles are principles which have been touched upon today; I am only repeating them; but these two principles I should like to inscribe upon a banner to be carried in a practical campaign for their introduction into our school system. The first of these mottoes is “more motor training,” and the second is “more motive training.”

More motor training. Our people and the public must be taught to know that there is a part of education in which books have no part, and while they build libraries with imposing porticoes and build school-houses of impressive masonry, they must build by every schoolhouse a gymnasium, and they must open at the door of every schoolhouse a playing field for the use of youth and young manhood. Bless God for light ; bless God for open air and exercise in the open air. These give us muscle ; these give us brain ; these, the high ideals by which we are to live. What crime have our children committed that so many of them are confined from three to five hours a day in cramped quarters and their only relief is to keep the lock-step of the chain-gang down long corridors? I plead for motor activity, for relaxation of muscles

and nerves, and more for relaxation of the will ; for an opportunity for self-expression. I believe the time will come—is fast approaching—when that study, which cannot find for itself rational modes of expression—modes of expression linked close to youth as well as manhood—will be driven from the door of the schoolhouse and find its proper city of refuge in the home of the professional scholar and man of learning. “Education” and “learning” are by no means synonymous terms.

The second motto that I wish to emphasize is the motto of motive training. The essence of all character is in motive and choice. Unless there is freedom for spontaneous activity, there can be no true training in character. Now, as we look over the opportunities that are offered by the secondary schools and the colleges, I ask in what field this motive training may be employed. Plainly and at once, the athletics and the school life. And yet into this mine of opportunity we as educators have only driven a shaft now and then. There are brigands who possess this land, and they descend into our well-tilled vineyards of the curriculum to pillage and plunder, to rob and to carry off. Some of us would build a Chinese wall twelve hundred miles long, and set thereon at various intervals towers, and keep out the barbarians. Some of us would make a compact with these people and pay them reluctant tribute. But my friends, that barbarian country is ours, as the educators of the people ; and yet that land is worthless except as it is theirs. The gold mines will vanish, and the ozoned air of the mountain tops will come to be but the sultry air of the plain. There is the paradox ; it is only worth our having as it is theirs.

But there are other fields offered by the school for this motive training which, it seems to me, we ought not to neglect, and that is in the fields of instruction. I speak of this with the more earnestness today because it seems to me that there is a tendency to bring into our courses and our work that which shall make this motive training less. The unbiased observer must feel that to control the secondary schools by a system of examinations is lessening the opportunity for richness of motive on the part of the pupils ; it is lessening the freedom of the teacher ; it is substituting for the many rich motives which are possible for the life at this period perhaps only one—the fear of failure in an examination. We must take great heed lest what we get as the result of such a system on the intellectual side shall be paid for by a narrowing on the side of motive and on the side of character.

The subject of the paper today is, “How can our system of education be better adapted to meet the needs of the times ?” I have been

somewhat disappointed that one point which is especially prominent in the needs of the times was omitted, and that the biological view was solely pursued and the social view was not spoken of. It seems to me that, if our country today has any needs, it is the needs that spring from the problems which we are facing. Is it possible for our social and industrial fabric to exist, or will it be rent and torn asunder? These are problems which come before us with great vigor, with great impressiveness, at the present time. The schools have a great deal to do with the answering of this problem. Competition tends to separate the social elements. The division of labor in such a community as we have tends to make it impossible for one part of the community to sympathize with another. There are two parts to which we should give heed in our school system and in our school training. The first is that part which prepares a man by specialization for his fitting himself into this complex and intricately arranged society in which we live. But there is a second part as important as the first, and that is that we shall see that in every mind of the rising generation there are implanted those thoughts, those feelings, and those principles which are the binding element in society. The greed and selfishness of the individual are taking ample care that specialization shall be carried to an extreme. We, as leaders and thoughtful in the matter of the education of our nation, must give heed that these combining elements are emphasized also. And so it seems to me that there are three important points in which we should give attention to our school system: first, to give it more motor training; second, more motive training; and, third, more emphasis upon the binding elements in our social life.